REMARKS

This paper is responsive to a non-final Office action dated January 30, 2004. Claims 1-28 were examined. The drawings are objected to under 37 C.F.R. § 1.83(a). Claim 16 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. Claims 1-12 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-4, 7, 9-10, 13-17, 19, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,272,171 to Okunev et al. Claims 1, 13, 20, 25, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,661,847 to Davis et al. Claims 5-6, 8, 11-12, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Okunev in view of Davis. Claims 20-23, 25-26, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Okunev in view of U.S. Patent No. 6,301,296 to Krishnan et al. Claim 24 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Okunev in view of Krishnan and further in view of Davis.

Specification

The specification has been amended to refer to FIG. 7. In addition, the specification has been amended to correct typographical errors. No new matter is added.

Drawings

The drawings are objected to under 37 C.F.R. § 1.83(a). New FIG. 7 has been added to show an embodiment of the present invention including a processor for execution instructions. FIG. 7 finds support at least in the specification at page 38, lines 10-13 and claims 25-28. No new matter is added. Regarding claims 20, 22, 25, and 26, the limitations included in these claims are illustrated at least by FIG. 4, FIG. 5, and FIG. 7. Applicant respectfully maintains that the drawings comply with 37 C.F.R. § 1.83. Accordingly, Applicants respectfully request that the objections to the drawings be withdrawn.

Rejections under 35 U.S.C. § 112, first paragraph

Claim 16 stands rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. The Office Action states that the "'highest power one of the next lowest power constellation points' is not described in the specification to teach how to

determine/enable 'a highest power one of the next lowest power constellation points.'" Applicant respectfully maintains that claim 16 meets the requirements of 35 U.S.C. § 112, first paragraph. "It is now well accepted that a satisfactory description may be in the claims or any other portion of the originally filed specification." MPEP § 2163 I. Based at least on the description provided in claim 16 and the specification beginning at page 32, line 20, teaching selection of constellation points based on amplitude estimates, one skilled in the art would know how to determine a highest power one of the next lowest constellation points as recited by claim 16. Accordingly, Applicant respectfully requests that the rejection of claim 16 be withdrawn.

Rejections under 35 U.S.C. § 112, second paragraph

Claims 1-12 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Claim 1 has been amended to provide proper antecedent basis for "such group." Accordingly, Applicant respectfully requests that the rejection of claims 1-12 be withdrawn.

Rejections under 35 U.S.C. § 102

Claims 1-4, 7, 9-10, 13-17, 19, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Okunev. Regarding claim 1, Applicant respectfully maintains that Okunev, alone or in combination with other references of record, fails to teach or suggest

> assigning constellation points for a constellation index based on one or more characteristic sets corresponding thereto, wherein the one or more characteristic sets include contributions of symbol estimates from phase intervals associated with one or more other constellation indices,

as recited by claim 1. The Office Action relies on col. 3, lines 35-40 and col. 5, lines 53-65 of Okunev to supply this teaching. These portions of Okunev teach generating a single set of candidate scaling factors and optimizing distances between constellation points independently for each slot (see also FIG. 1b, and FIGS. 8a-8c, and col. 18, line 34-col. 22, line 67 of Okunev).

Nowhere does Okunev teach or suggest assigning constellation points for a constellation index based on one or more corresponding characteristic sets including contributions of symbol estimates from phase intervals associated with one or more other constellation indices, as required by claim 1. For at least this reason, Applicants submit that claim 1 distinguishes over Okunev, alone or in combination with other references of record. Accordingly, Applicants respectfully request that the rejection of claim 1 and all claims dependent thereon, be withdrawn.

Regarding claim 13, Applicants respectfully maintain that Okunev fails to teach or suggest

> for each of the J constellation indices, selecting constellation points based on the characteristic groups associated with the one or more respective phases,

as recited by claim 13. The Office Action relies on col. 5, lines 53-67 of Okunev to supply this teaching. This portion of Okunev teaches optimizing distances between constellation points independently for each slot. See also FIG. 1b, and FIGS. 8a-8c, and col. 18, line 34-col. 22, line 67 of Okunev, which teach generating a constellation on a per-slot basis. Nowhere does Okunev teach or suggest selecting constellation points based on characteristic groups associated with one or more respective phases, as required by claim 13. For at least this reason, Applicant submits that claim 13 distinguishes over Okunev, alone or in combination with other references of record. Accordingly, Applicant respectfully requests that the rejection of claim 13 and all claims dependent thereon, be withdrawn.

Regarding claim 27, Applicant respectfully maintains that Okunev fails to teach or suggest

> said instructions including an impairment compensation subset thereof executable to group N phases of a symbol sequence received by the communications device into a set of characteristic groups according to correspondence of aggregate effects of periodic

> impairments, if any, present in the N phases, the impairment compensation subset of instructions selecting constellation points using symbol estimates characteristic of the grouped phases,

as recited by claim 27. The Office Action relies on col. 5, lines 53-67 of Okunev to supply this teaching. This portion of Okunev teaches optimizing distances between constellation points independently for each slot. See also FIG. 1b, and FIGS. 8a-8c, and col. 18, line 34-col. 22, line 67 of Okunev, which teach generating a constellation on a per-slot basis. Nowhere does Okunev teach or suggest selecting constellation points using symbol estimates characteristic of grouped phases, as required by claim 27. For at least this reason, Applicants submit that claim 27 distinguishes over Okunev, alone or in combination with other references of record. Accordingly, Applicants respectfully request that the rejection of claim 27 and all claims dependent thereon, be withdrawn.

Claims 1, 13, 20, 25, and 27 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Davis. Regarding claim 1, Applicants respectfully maintain that Okunev, alone or in combination with other references of record, fails to teach or suggest

> grouping phase intervals into groups based on similarity of aggregate impairment exhibited therein and calculating a characteristic set of symbol estimates for each such group,

as recited in claim 1. The Office Action relies on FIG. 3, col. 6. lines 30-40, col. 6, line 65-col. 7, line 2, col. 7, lines 10-20, lines 41-46 to supply this teaching. These portions of Davis teach encoding blocks of K bits into a sequence of 6 indices through a modulus encoding technique. (Col. 6. lines 30-32). The constellation generation method selects indices of the sequence and determines pad attenuation and, for each of the 6 intervals, an RBS parameter. The parameters are used to obtain voltage levels for 128 ucodes, which represent the 128 nonnegative voltage levels specified by the ITU-T Recommendation G.711. (Col. 7, lines 11-21) These 128 voltage levels are used to generate the constellation. (Col. 7, lines 19-21, lines 41-46) Davis generates a voltage level for all of the specified ucodes. Nowhere does Davis teach or suggest calculating a

characteristic set of symbol estimates for each group of phase intervals, where the phase intervals are grouped based on similarity of aggregate impairments exhibited in the phase intervals. For at least this reason, Applicant submits that claim 1 distinguishes over Davis, alone or in combination with other references of record. Accordingly, Applicant respectfully requests that the rejection of claim 1 and all claims dependent thereon, be withdrawn.

Regarding claim 13, Applicant respectfully maintains that Davis fails to teach or suggest

> grouping the N phases into a set of characteristic groups according to aggregate effects of the periodic impairments, if any, present in the N phases and without a priori identification of individual forms of the periodic impairments present therein,

as recited by claim 13. The Office Action relies on col. 7, lines 10-20, lines 45-67 to supply this teaching. These portions of Davis teach encoding blocks of K bits into a sequence of 6 indices though a modulus encoding technique. (Col. 6. lines 30-32). The constellation generation method selects indices of the sequence and determines pad attenuation and for each of the 6 intervals an RBS parameter. The parameters are used to obtain voltage levels for 128 ucodes, which represent the 128 nonnegative voltage levels specified by the ITU-T Recommendation G.711. (Col. 7, lines 11-21) Davis teaches grouping sequences of bits according to modulus encoding. Nowhere does Davis teach or suggest grouping the N phases into a set of characteristic groups according to aggregate effects of the periodic impairments. For at least this reason, Applicant submits that claim 13 distinguishes over Davis, alone or in combination with other references of record. Accordingly, Applicant respectfully requests that the rejection of claim 13 and all claims dependent thereon, be withdrawn.

Regarding claim 20, Applicants respectfully maintain that Davis fails to teach or suggest

> an impairment compensator coupled into the receive path during a training mode to receive the sequence and group the N phases thereof into a set of

characteristic groups according to aggregate effects of the periodic impairments, if any,

as recited in claim 20. The Office Action relies on col. 6, lines 10-20, 60, and FIG. 1 to supply this teaching. Davis teaches encoding blocks of K bits into a sequence of 6 indices though a modulus encoding technique. (Col. 6. lines 30-32). The constellation generation method selects indices of the sequence and determines pad attenuation and for each of the 6 intervals an RBS parameter. The parameters are used to obtain voltage levels for 128 ucodes, which represent the 128 nonnegative voltage levels specified by the ITU-T Recommendation G.711. (Col. 7, lines 11-21) Davis teaches grouping sequences of bits according to modulus encoding. Nowhere does Davis teach or suggest grouping the N phases into a set of characteristic groups according to aggregate effects of the periodic impairments. For at least this reason, Applicant submits that claim 20 distinguishes over Davis, alone or in combination with other references of record. Accordingly, Applicant respectfully requests that the rejection of claim 20 and all claims dependent thereon, be withdrawn.

Regarding claim 27, Applicant respectfully maintains that Davis fails to teach or suggest

said instructions including an impairment compensation subset thereof executable to group N phases of a symbol sequence received by the communications device into a set of characteristic groups according to correspondence of aggregate effects of periodic impairments, if any, present in the N phases, the impairment compensation subset of instructions selecting constellation points using symbol estimates characteristic of the grouped phases,

as recited in claim 27. The Office Action relies on col. 6, lines 5-20, col. 10, lines 35-67, and col. 16, lines 40-60 to supply this teaching. Davis teaches encoding blocks of K bits into a sequence of 6 indices though a modulus encoding technique. (Col. 6. lines 30-32). The constellation generation method selects indices of the sequence and determines pad attenuation and for each of the 6 intervals an RBS parameter. The parameters are used to obtain voltage

levels for 128 ucodes, which represent the 128 nonnegative voltage levels specified by the ITU-T Recommendation G.711. (Col. 7, lines 11-21) Davis teaches grouping sequences of bits according to modulus encoding. Nowhere does Davis teach or suggest grouping the N phases into a set of characteristic groups according to aggregate effects of the periodic impairments. For at least this reason, Applicant submits that claim 27 distinguishes over Davis, alone or in combination with other references of record. Accordingly, Applicant respectfully requests that the rejection of claim 27 and all claims dependent thereon, be withdrawn.

Rejections under 35 U.S.C. § 103

Claims 5-6, 8, 11-12, and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Okunev in view of Davis. Applicant believes that claims 5-6, 8, 11-12, and 18 depend from allowable claims, and that these claims are allowable for at least this reason. Accordingly, Applicant respectfully requests that the rejection of claims 5-6, 8, 11-12, and 18 be withdrawn.

Claims 20-23, 25-26, and 28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Okunev in view of Krishnan et al. Regarding claim 20, Applicants respectfully maintain that Davis fails to teach or suggest

> the impairment compensator selecting, for each of J constellation indices, constellation points based on the characteristic groups associated with the respective phase intervals corresponding thereto,

as recited in claim 20. Okunev teaches optimizing distances between constellation points independently for each slot (see also FIG. 1b, and FIGS. 8a-8c, and col. 18, line 34-col. 22, line 67 of Okunev). Nowhere does Okunev teach or suggest selecting constellation points based on characteristic groups associated with respective phase intervals, the grouping of phases into characteristic groups being based on aggregate effects of periodic impairments, as required by claim 20. Krishnan fails to compensate for the shortcomings of Okunev. Krishnan teaches a DIL sequence designed to provide a reliable estimate of digital impairments. (Abstract) Krishnan fails to teach or suggest selecting constellation points based on characteristic groups

associated with respective phase intervals, the grouping of phases into characteristic groups being based on aggregate effects of periodic impairments, as required by claim 20. For at least this reason, Applicants submit that claim 20 distinguishes over Okunev, alone or in combination with other references of record. Accordingly, Applicant respectfully requests that the rejection of claim 20 and all claims dependent thereon, be withdrawn.

Claim 24 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Okunev in view of Krishnan and further in view of Davis. Applicant believes that claim 24 depends from an allowable claim and that this claim is allowable for at least this reason. Accordingly, Applicant respectfully requests that the rejection of claim 24 be withdrawn.

In summary, claims 1-28 are in the case. All claims are believed to be allowable over the art of record, and a Notice of Allowance to that effect is respectfully solicited. Nonetheless, if any issues remain that could be more efficiently handled by telephone, the Examiner is requested to call the undersigned at the number listed below.

CERTIFICATE OF MAILING OR TRANSMISSION

I hereby certify that, on the date shown below, this correspondence is being

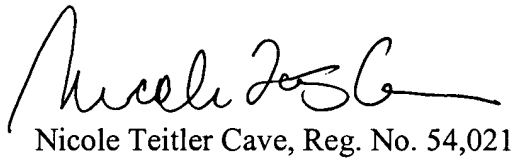
☐ deposited with the US Postal Service with sufficient postage as first class mail, in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

☐ facsimile transmitted to the US Patent and Trademark Office.

_____ _____
Date

EXPRESS MAIL LABEL: EV436536525US

Respectfully submitted,



Nicole Teitler Cave, Reg. No. 54,021
Attorney for Applicant(s)
(512) 338-6315
(512) 338-6301 (fax)